

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following remarks is respectfully requested.

Claims 10-20 are active in this application, Claims 1-9 having been cancelled without prejudice by the present amendment.

In the outstanding Office Action, Claims 1-13 were rejected under 35 USC §103(a) as being unpatentable over Ohnishi et al (U.S. Patent No. 6,153,460, herein "Ohnishi") in view of Beach et al (U.S. Patent No. 5,416,042, herein "Beach"), and Claims 14-20 were allowed.

Applicants acknowledge with appreciation the allowance of Claims 14-20.

Applicants note an Information Disclosure Statement (IDS) was filed on September 30, 2003, which at this time has been indicated as partially considered. More specifically, the AW reference was not initialed as considered on the PTO-1449 attached to the outstanding Office Action mailed March 10, 2005. Applicants respectfully request the Examiner to consider all the references provided in the IDS. Copies of the filed IDS, the PTO-1449 form, the Statement of Relevancy, and the date-stamped Filing Receipt are provided herewith for the Examiner's convenience. Applicants respectfully request all of the references listed on the PTO-1449 form be initialed as considered.

In light of the outstanding rejection on the merits, Claims 1-9 have been cancelled without prejudice. In addition, the rejection of Claims 10-13 is respectfully traversed for the following reasons.

Briefly recapitulating, Claim 10 is directed to a method of manufacturing a semiconductor device, the method reciting "forming an alumina film on the underlying region; forming a hole in the alumina film; [and] filling the hole with a conductive film to form a plug." By these steps, the side surface of the plug is protected by an alumina film

which is superior in oxygen barrier properties, and the problem of the conventional devices that the plug is oxidized by oxygen can be prevented. As explained in the "Background of the Invention" portion of Applicants' specification, in the case of a COP (capacitor on plug) structure in which a plug is disposed right under a capacitor, it is important to prevent a problem that the plug is oxidized by oxygen.

In contrast to the claimed invention, Ohnishi teaches forming a SiO₂ film 2 and a SiN film 3 on the side surface of a plug 4 and a barrier metal 5 as shown in Figures 2(a)-(f). However, Ohnishi does not teach or suggest forming an alumina film as required by Claim 10. Although the outstanding Office Action asserts at page 4, line 12, that Ohnishi discloses at column 7, line 66, to column 8, line 10, an alumina film, that assertion is not accurate.

In addition, unlike the alumina film, a SiO₂ or a SiN film does not have high oxygen barrier property. On that account, a SiO₂ or SiN film cannot overcome the above-described problem of oxidation. In view of this deficiency, it is respectfully submitted that Ohnishi clearly does not anticipate or obviate the claimed invention.

Beach discloses forming a SiO₂ on the side surface of a plug POLY Si as shown in Figures 3A-G. However, Beach does teach or suggest forming an alumina film as required by Claim 10.

Accordingly, if the teachings of Beach were combined with those of Ohnishi, the claimed method still would not be obviated because neither reference teaches an alumina film formed as required by Claim 10. Accordingly, the outstanding rejection on the merits is believed to have been overcome and withdrawal of this rejection is believed to be warranted and is respectfully requested.

Consequently, in view of the present amendment and in light of the above comments, no further issues are believed to be outstanding, and the present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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